report, the yield displacement calculated by equation and by pushover analyses are higher than the one inch design limit generally used by the NCDOT.

Transverse Displacements Required to Close Expansion Joints

As outlined in Robinson et al (2006), serviceability limit state was proposed on the basis of joint closure. The bridge system is treated as a multi-span support system with foundation and abutments represented as springs. Limit state is established on the basis of the distance that a joint gap would close due to an applied lateral load in the transverse direction. Figure 112 and Equation 20 through Equation 22 show one configuration with the various parameters associated with determining the joint closure.

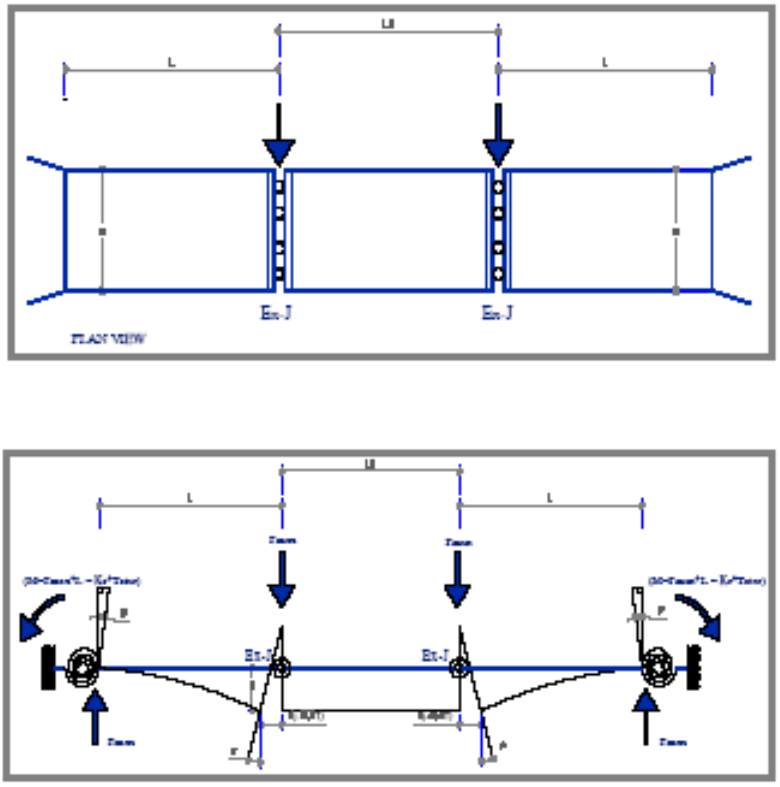

Figure 112. Joint Closure Model for 3 spans supported by 2 interior pile bents at the expansion joints (Robinson et al 2006)